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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,626	08/24/2006	John Richard Severn	5256-3	2296
23117 7590 01/28/2010 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203				
EXAMINER				
LU, C CAIXIA				
ART UNIT		PAPER NUMBER		
1796				
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01/28/2010		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

## Application No.

10/590,626

## Applicant(s)

SEVERN ET AL.

## Examiner

Caixia Lu

## Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 17-33 is/are pending in the application.
- 4a) Of the above claim(s) 25-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17-24 and 29-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 14, 2009 has been entered.

***Claim Rejections - 35 USC § 103***

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 17-24 and 29-33 rejected under 35 U.S.C. 103(a) as being unpatentable over Sacchetti et al. (US 5,698,487) in view of Wu et al. (US 6,555,494) and Sangokoya et al. (US 5,565,395) for the same rationale as set forth in the previous Office Action mailed May 14, 2008.

***Response to Arguments***

4. Applicant's arguments filed December 16, 2009 have been fully considered but they are not persuasive.

Applicants argue that Sacchetti's metallocene complex is preactivated with triisobutylaluminum before it is deposit on the support. This is not correct. Sacchetti's discloses that the metallocene compounds are sparingly soluble in hydrocarbons, their solubility increases considerably if the solvent contains a dissolved alkyl-Al compound such as triethyl-Al and triisobutyl-Al (col. 5, lines 60-67). For example, when the less soluble metallocene complexes such as ethylene-bis-indenyl zirconium dichloride is contacted with triisobutylaluminum, the chloride group on the metallocene complex is replaced with isobutyl and converts to ethylene-bis-indenyl zirconium di(isobutyl) which is readily

soluble in the hydrocarbon solvent such as hexane as shown at least in Sacchetti's Example 1. Metallocene complex such as ethylene(bisindenyl) zirconium di(isobutyl) is not activated until it is contacted with an activator such as the adduct support activator of spherical  $\text{MgCl}_2\cdot 3\text{EtOH}$ /trialkylaluminum with or without alumoxane as shown in Sacchetti's Examples 1-11. Those olefin polymerization processes conducted in the presence of the  $\text{MgCl}_2\cdot 3\text{EtOH}$ /trialkylaluminum supported metallocene catalysts without alumoxane activators are demonstrated in Sacchetti's Example 6 (col. 12, lines 64-67) and Example 10 (col. 14, lines 45-50), which is contrary to applicants assertion that all of Sacchetti's catalysts (indenylzirconium) are reacted with triisobutyl-Al and subsequently activated with aluminoxane.

Applicants assert that, in the metallocene complex, the cationic complex comprises the zirconium metal with cyclopentadienyl ligands and one organic group like a butyl group as a counter ion. However, it is well established that group such as butyl is not bulky enough and the butyl is covalently bonded to Zr, therefore, metallocene such as ethylene(bisindenyl) zirconium di(isobutyl) is not very active towards polymerization until the metallocene is contacted with an activator such as  $\text{MgCl}_2\cdot 3\text{EtOH}$ /trialkylaluminum with or without alumoxane (in Sacchetti's catalyst composition) since such an activator is a Lewis base and can bond with the butyl in ethylene(bisindenyl) zirconium di(isobutyl) to provide the activated Zr complex cation.

Applicants argue that Sacchetti's metallocene complex is only active towards polymerization if used in combination with methylalumoxane, whereas the presently claimed catalyst system is free of MAO. As shown above, Sacchetti's Example 6 (col. 12, lines 64-67), Example 10 (col. 14, lines 45-50) demonstrate the olefin polymerization in the presence of  $\text{MgCl}_2\cdot 3\text{EtOH}$ /trialkylaluminum support

catalyst composition without aluminoxane. The Examiner apologizes for inadvertently mistakenly citing Sacchetti's Example 8 in the previous Office Action mailed November 14, 2008.

Applicants also argue that the presently claimed catalyst is not a metallocene and consequently there is no motivation to combine Sacchetti with Wu and Sangokoya. On the contrary, the elected catalyst transition metal complex represented by formula (III) contains a cyclopentadienyl group and Cr, such a complex is a cyclopentadienylide (i.e. metallocene) by definition. Most importantly, both Wu and Sangokoya both teach that those chromocene are analogues to metallocenes where the transition metal is Zr, Hf and Ti; see cols. 12-13 of Wu and col. 3-4 of Sangokoya for supports. Therefore, it is proper to combine the teaching of the above cited prior art to provide a supported chromocene with good particle property for gas phase olefin polymerization.

Finally, Applicants are reminded that the instant claims do not exclude the aluminoxane component from the catalyst composition due to the term "comprising" in the claims.

In view of the foregoing the rejections are still deemed proper and thus maintained.

### ***Conclusion***

1. This is a continued examination. All claims are drawn to the same invention claimed in the claims filed August 24, 2006 and have been finally rejected in the previous Office Action mailed November 14, 2008. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH

shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caixia Lu whose telephone number is (571) 272-1106. The examiner can normally be reached on 9:00 a.m. to 5:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Caixia Lu/  
Primary Examiner, Art Unit 1796